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ABSTRACT

This study examined the power of school-aged children's creative thinking and temperament to predict children's coping abilities as observed in the school setting. The study also examined children's typical responses to major and minor stressful life events. A total of 60 children between 9 and 12 years of age completed the verbal and figural portions of the Torrance Tests of Creative Thinking (Form A) and the Stress Impact Scale. An observational rating scale of coping behavior was also completed for each child by trained observers after extensive observations of children in the school environment over a period of several months. The Stress Response Scale and Middle Childhood Temperament Questionnaire were completed by mothers of the children. Results showed that age and four Torrance figural indicators of creative thinking (fluency, originality, elaboration, and resistance to premature closure) were associated with children's coping abilities. Resistance to premature closure was most strongly predictive of coping abilities. While the findings indicated a general lack of relationship between creative thinking and various characteristics of temperament, children's activity level was strongly associated with their level of creative thinking and use of effective coping skills. Dimensions of temperament most predictive of less difficult responses to stress and a lower perceived stress impact were rhythmicity (predictability) of behavior, positive mood, and adaptability to change. (Author/MM)

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CREATIVE THINKING AND TEMPERAMENT AS PREDICTORS OF SCHOOL-AGED CHILDREN'S COPING ABILITIES AND RESPONSES TO STRESS

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Abstract

Sixty 9-12 year-old children were administered the verbal and figural portions of the Torrance Tests of Creative Thinking (Form A) and the Stress Impact Scale. An observational rating scale of coping behavior, the Coping Inventory, was also completed on each child by trained observers after extensive observations of children in the school environment over a period of several months. The Stress Response Scale and Middle Childhood Temperament Questionnaire were completed by mothers of the children. The results showed that age and four Torrance figural indicators of creative thinking, including fluency, originality, elaboration, and resistance to premature closure, were associated with children's coping abilities. Resistance to premature closure was most strongly predictive of coping abilities. While the findings indicated a general lack of relationship between creative thinking and various characteristics of temperament, activity level was strongly associated with both higher levels of creative thinking and more effective coping skills. Dimensions of temperament most predictive of less difficult responses to stress and a lower perceived stress impact were rhythmicity (predictability) of behavior, positive mood, and adaptability to change.

INTRODUCTION

There has been a scarcity of research concerning the relation between children's creative thinking and their coping abilities and responses to stress. Creative thinking may be linked to coping via children's ability to think more divergently and, hence, problem-solve more effectively in response to daily hassles and strains and major life events. Moreover, while a few studies have examined the association between children's temperament characteristics and how they cope with stress (i.e., in regard to their overall vulnerability and resiliency) and exhibit behavior problems, there is a need to examine this construct in greater depth. Further, little is known about the association between creative thinking and temperament.

The purpose of this study was to examine the predictive power of creative thinking and temperament in relation to school-aged children's coping abilities as observed in the school setting, and their typical responses to both major and minor stressful life events. Our expectation was that certain aspects of creative thinking (i.e., fluency, flexibility, originality, and resistance to premature closure) and more positive characteristics of temperament (particularly predictability, positive mood, approach, and adaptability to change) would be associated with greater coping abilities and fewer problematic stress responses.

Method

Sixty third through sixth grade Caucasian children (29 males

and 31 females) from two schools in a university town of approximately 40,000 people were investigated (age range 8-12 years; mean = 9.87). Most children were from two-parent middle class homes.

Mothers completed the Stress Response Scale (SRS) (Chandler, 1986) and Middle Childhood Temperament Questionnaire (MCTQ) (Hegvik, McDevitt, & Carey, 1980) on their child. Four trained upper-level college students conducted group assessments and several 20-minute observations on each child in the school setting over a period of four months (two students in each school), after which they each completed an observational rating scale on each child, the Coping Inventory (CI) (Zeitlin, 1985). Inter-rater reliability among pairs of raters on all six scales of the CI was high (range .74 to .94; overall correlation of .83). Group administered measures included the verbal and figural portions (Form A) of the Torrance Tests of Creative Thinking (TTCT) (Torrance, 1962, 1966, 1974) and a measure of the child's perception of the occurrence and impact of stressful life events, the Stress Impact Scale (SIS) (Hutton & Roberts, 1990). Mean scores on all CI scales between the two raters in the first school (n = 32 children) and the second school (n = 28 children) were used in the statistical analyses. The MCTQ and Torrance verbal and figural scales served as the independent variable measures.

Results

The TTCT figural scales of figural fluency, originality,

elaboration, and resistence to premature closure were positively associated with several scales on the Coping Inventory. However, only one of the TTCT verbal scales, flexibility, correlated with the CI (i.e., coping with self-active) (Table 1).

There were few significant correlations between the TTCT scales, SRS scales, and most dimensions of temperament, and none between the TTCT scales and those on the SIS. However, activity level was positively associated with several TTCT figural scales, including fluency (r = .56, p < .01), originality (r = .48, p < .01), elaboration (r = .48, p < .01), resistence to premature closure (r = .49, p < .01), and the total TTCT figural creativity index (r = .43, p < .01). Verbal flexibility on the TTCT was negatively associated with the SRS scales of passive aggression (r = -.26, p < .05) and depression (r = -.29, p < .05), and verbal fluency correlated negatively with repression (r = -.36, p < .01).

Activity also correlated positively with the CI scales of self-productive (r = .51, p < .01), self-active (r = .93, p < .001), and self-flexible (r = .91, p < .001), as well as environment-productive (r = .65, p < .01), environment-active (r = .93, p < .001), environment-flexible (r = .93, p < .001), and the total CI Adaptive Behavior Index score (r = .77, p < .01).

Several dimensions of temperament correlated significantly with stress responses and stress impact (Table 2). Since higher scores on most temperament inventory scales connote areas of greater difficulty (e.g., unpredictability, negative mood, lower

adaptability, etc.), with the exception of activity level and response threshold, problematic responses to stress were generally associated with more difficult temperament characteristics.

Age of the children was not associated with most scale scores. However, age was positively correlated with all CI scales except the coping with self-productive scale. Age also correlated positively with Torrance verbal flexibility and originality scale scores. Sex of the children was largely unrelated to scale scores.

Stepwise multiple regression analyses were next conducted, with age included as an independent variable with the creative thinking scales (run one) and temperament scales (runs two and three). The results indicated that, although age was predictive of scores on four CI scales, the predictive power of various aspects of creative thinking in relation to coping abilities remained strong (Table 3). Resistence to premature closure was most predictive of greater coping abilities and fewer problematic responses to stress. The temperament characteristic of activity level, and age, were most predictive of effective coping (Table 4). Finally, several dimensions of temperament were predictive of children's responses to stress and perceived stress occurrence and impact. Children who were more unpredictable, generally more negative in mood, lower in adaptability to change, lower in approach behavior, and higher in intensity of reaction were reported to manifest more behavior problems, including impulsive

acting-out and implusive overactive behaviors, passive-aggressiveness, repression, and dependency. Children who were rated as less rhythmical (predictable) and more moody perceived that they were confronted with more stressors in their lives, and that these stressors had a greater negative impact on them (Table 5).

Conclusions

Several tentative conclusions can be drawn from this study. First, our data showed that while verbal indicators of creative thinking were largely unrelated to coping and stress responses, several figural indicators (i.e., fluency, originality, elaboration, and resistence to premature closure) were strongly associated with coping abilities. Resistance to premature closure in one's thinking may be one variable that is particularly important to coping abilities and needs to be further investigated. Second, since temperament and creativity were largely unrelated in our correlational analyses (with the exception of activity), it is unlikely they are confounded. Third, it may be that activity level is associated with greater physical and mental energy and stamina -- two factors that may contribute directly or indirectly to the ability or motivation of children to think more creatively (e.g., by imaginging alternatives to a situation or problem and not settling on only one way of looking at things) and cope more effectively with the rigors of modern life. Fourth, while age may not be a major factor in the manifestation of problem behaviors (SRS) or

perception of stressful life events (SIS) at this time in childhood, the developmental progression from third to sixth grade may entail an increase in coping abilities (CI) -- at least as exhibited in the school environment. Finally, our findings suggest that creative thinking is a capacity that needs to be encouraged from a young age both at home and in our schools, since the development of creative thinking abilities may have secondary benefits with regard to enhancing resiliency and reducing vulnerability to stress. Critical and convergent thinking abilities do not have be de-emphasized in order for parents, teachers, and other adults to provide greater opportunities for the augmentation of children's creative thinking.

References

Chandler, L.A. (1986). The Stress Response Scale for Children: Revision. Pittsburgh, PA: The Psychoeducational Clinic, University of Pittsburgh.

Hegvik, R.L., McDevitt, S.C., & Carey, W.B. (1980). Middle Childhood Temperament Questionnaire. Philadelphia, PA: College of Education, Temple University.

Hutton, J.B., & Roberts, T.G. (1990). Stress Impact Scale. Austin, TX: Pro-Ed.

Torrance, E.P. (1962, 1966, 1974). Torrance Tests of Creative Thinking. Bensenville, IL: Scholastic Testing Service, Inc.

Zeitlin, S. (1985). Coping Inventory. Bensenville, IL: Scholastic Testing Service, Inc.

Table 1. Correlations Among Torrance Test and Coping Inventory Scales (N=60)

	CISP	CISA	CISF	CIEP	CIEA	CIEF	ABISC
TTCT Verbal Fluency	-.60	.05	-.07	-.02	.09	-.13	-.02
TTCT Verbal Flexibility	.04	.32*	.25	.24	.22	.18	.25
TTCT Verbal Originality	-.05	.14	.05	-.02	.08	-.01	.06
TTCT Verbal SS Battery	-.17	-.25	-.20	-.25	-.19	-.25	-.24
TTCT Figural Fluency	.27*	.48**	.48**	.27*	.53**	.47**	.37**
TTCT Figural Originality	.19	.39**	.37**	.20	.44**	.39**	.28*
TTCT Figural Abstractness of Titles	-.09	-.25	-.18	-.12	-.08	-.18	-.17
TTCT Figural Elaboration	.18	.37**	.35**	.18	.42**	.37**	.25
TTCT Figural Resistance to Premature Closure	.16	.37**	.37**	.17	.38**	.37**	.24
TTCT Figural Creativity Index SS	.11	.32*	.31*	.13	.33*	.33*	.19

* $p < .05$ ** $p < .01$

CISP = Coping Inventory Self Productive scale
CISA = Coping Inventory Self Active scale
CISF = Coping Inventory Self Flexible scale
CIEP = Coping Inventory Environment Productive scale
CIEA = Coping Inventory Environment Active scale
CIEF = Coping Inventory Environment Flexible scale
ABISC = Adaptive Behavior Index Score

Table 2. Correlations Among Temperament, Stress Response, and Stress Impact Scales (N=60)

	ACT	PRE	APP	ADP	INT	MOD	PER	DIS	THR
[a] SRS									
Impulsive-Acting Out	-.02	.45**	-.14	.61**	.31*	.58**	.44**	.40**	.01
Passive Aggressive	-.09	.68**	-.08	.26*	-.18	.31*	.57**	.17	-.21
Impulsive-Overactive	-.01	.11	-.47**	.33**	.42**	.25	.08	.29*	-.13
Repression	-.01	.21	.26*	.30*	.07	.33*	.14	.30*	.23
Dependency	.05	.03	.06	.03	-.28*	.01	.21	.05	-.01
SRS Total Raw Score	-.04	.66**	-.18	.60**	.18	.62**	.61**	.42**	-.11
[b] SIS									
Stress Occurrence	-.04	.41**	-.18	.20	-.07	.01	.26*	.10	-.07
Stress Impact	-.01	.42**	-.21	.20	-.13	.02	.34**	.19	-.06
Stress Impact Differential	.01	.38**	-.20	.22	-.13	.05	.33*	.21	-.03

* $p < .05$ ** $p < .01$

a Stress Response Scale

b Stress Impact Scale

ACT = Activity
PRE = Predictability
APP = Approach/Withdrawal
ADP = Adaptability
INT = Intensity
MOD = Mood
PER = Persistence
DIS = Distractibility
THR = Threshold

Table 3. Age and Torrance Test Scores as Predictors of Scores on the Coping Inventory, Stress Response Scale, and Stress Impact Scale

Dependent Variables/ Independent Variables	R2	F	Beta	t
Coping with self-active		5.48*		
TTCT Verbal Flexibility	.11		.33	2.34*
Coping total self score		5.01**		
Age	.08		.38	2.66**
TTCT Figural Resistance to Premature Closure	.19		.33	2.35*
Coping with environment-productive		5.39**		
Age	.12		.42	3.01**
TTCT Figural Resistance to Premature Closure	.20		.29	2.05*
Coping with Environment-active		7.33**		
TTCT Figural Resistance to Premature Closure	.14		.46	3.42**
Age	.25		.35	2.56*
SRS Passive-Aggressive		4.93*		
TTCT Figural Resistance to Premature Closure	.10		-.32	-2.22*
SRS Repression		8.23**		
TTCT Verbal Fluency	.16		-.40	-2.87**
SRS Dependency		4.74*		
TTCT Verbal Flexibility	.09		-.36	-2.54*
TTCT Figural Originality	.18		-.31	-2.18*
SRS Total Raw Score		4.62*		
TTCT Figural Resistance to Premature Closure	.10		-.31	-2.15*
SIS Stress Occurrence		4.13*		
TTCT Figural Resistance to Premature Closure	.09		-.29	-2.03*

* $p < .05$ ** $p < .01$

Table 4. Age and Middle Childhood Temperament Questionnaire Scores as Predictors of Scores on the Coping Inventory

Dependent Variables/ Independent Variables	R2	F	Beta	t
Coping with self-productive		20.33***		
Activity level	.27		.52	4.51***
Coping with self-active		189.01***		
Activity level	.86		.91	18.37***
Age	.87		.11	2.21*
Coping with self-flexible		138.20***		
Activity level	.82		.88	15.67***
Age	.83		.12	2.04*
Coping total self score		39.86***		
Activity level	.56		.71	8.04***
Age	.59		.18	2.07*
Coping with environment-productive		18.13***		
Activity level	.42		.66	7.04***
Age	.48		.22	2.43*
Predictability	.52		-.36	-3.38**
Mood	.58		-.29	-2.74**
Coping with environment-active		339.49***		
Activity level	.86		.93	18.43***
Coping with environment-flexible		353.37***		
Activity level	.86		.93	18.80***
Coping total environment score		54.52***		
Activity level	.49		.70	7.38***
Coping Adaptive Behavior Index		80.14***		
Activity level	.59		.77	8.95***

* $p < .05$ ** $p < .01$ *** $p < .001$

Table 5. Age and Middle Childhood Temperament Questionnaire Scores as Predictors of Stress Response and Stress Impact Scores

Dependent Variables/ Independent Variables	R2	F	Beta	t
SRS Impulsive Acting-Out		20.82***		
Adaptability	.39		.41	2.88**
Mood	.43		.30	2.10*
SRS Passive Aggressive		28.97***		
Predictability	.45		.69	7.31***
Intensity	.51		-.26	-2.73**
SRS Impulsive Overactive		15.20***		
Approach/Withdrawal	.23		-.44	-4.20**
Intensity	.36		.28	2.47*
Adaptability	.42		.26	2.40*
SRS Repression		5.74**		
Mood	.11		.32	2.62*
Approach/Withdrawal	.17		.26	2.09*
SRS Dependency		4.85*		
Intensity	.08		-.28	-2.20*
SRS Total Raw Score		33.70***		
Predictability	.41		.47	4.67***
Adaptability	.55		.41	4.10**
SIS Stress Occurrence		8.23		
Predictability	.17		.57	4.06**
Mood	.23		.29	2.09*
SIS Stress Impact		8.31		
Predictability	.18		.58	4.07**
Mood	.23		.28	2.01*
SIS Stress Impact Differential		9.64		
Predictability	.15		.38	3.11**

* $p < .05$ ** $p < .01$ *** $p < .001$